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Here the quantity of oxygen amounted to 1.28 per cent, for the changes in the metal, and to 0.02 per cent, for the iron in the slag, or to a total of 1.30 per cent.

There was evidently some slag remaining in the furnace from the previous charge. One sees that the oxygen content of the slag had been considerably lowered and that iron and manganese had been reduced from it.

The covering of the oxygen requirements of the reducing agents in the iron, and metallic oxides in the slag by the gases forming the flame, is still more clearly perceptible in the example given by P. W. Harbord, at Bilston, which has been already referred to.

As no working data are given as to this furnace, the quantity of the slag may be approximately estimated from its phosphorus content and that of the charge, as follows:—
When melted.

Per cent.

P eliminated 1.08-P2O5 due thereto $1.08 \times 2.29 = 2.47$ P2O5 per cent, in slag 12.5 Weight of slag $\frac{2.47}{12.5} = 0.1976$

Four hours after molting down.

Per cent. $2.184 - 2.114 \times 2.29 = 4.851$

10.19

485-1

about J1

If we assume that this increase of slag from 20 per cent. when charge melted down, to 30 per cent, in the course of four hours thereafter took place at uniform rate, we can calculate the quantities of slag and oxygen combined with iron therein for the intermediate periods. The values derived in this manner are added to the table taken from Mr. Harbord's paper, and are used in setting out the diagram Fig. 13.

As the iron content of the slag is small, the faults which originate from the method of calculation can scarcely be so large as to efface the character of the phenomena.

Such small furnaces are seldom employed nowadays, likewise such very impure charges are worked by other methods. Apparently, on this occasion, the furnace had furnished an amount of oxygen equal to some 817 per cent, of the weight of the charge, the major portion, i.e., 580 per cent, being in

the

following

of the

At the end of the